



International Conference on Smart Machining Systems

March 13th–15th 2007

National Institute of Standards and Technology (NIST)

Gaithersburg, USA

<http://www.mel.nist.gov/sms>

Objective: Bring together experts from both industry and academia to share and discuss latest advances towards integrated Smart Machining Systems technologies and encourage cooperative efforts in this field.

Scope: Smart Machining Systems, SMS, are the next stage in the evolution of machining systems within the manufacturing enterprise. A Smart Machining System will enable cost effective manufacture of first and every subsequent part to specification and on schedule. Such system will complement and enhance the effectiveness of machine operators, process planners and design engineers in the manufacturing enterprise by sharing the knowledge and information among these functions to optimize the design and manufacturing processes to their fullest. Smart Machining Systems are envisioned to have the following characteristics:

- self recognition and communication of their capabilities to other parts of the manufacturing enterprise;
- self monitoring and optimizing their operations;
- self assessing the quality of their own work;
- self learning and performance improvement over time; and
- enhancing human interaction.

This is an emerging and evolving field of research in industry and academia with continued strong impact on industry practice, and on necessary metrology and standards. This international conference will bring together researchers, developers, and users of technologies that are essential components of SMS and challenge them to explore the integration of these technologies. The program will consist of presentations on all aspects of SMS technologies, including but not limited to:

- Smart machine tool components such as spindles, drive systems, controls;
- Machine tool condition monitoring;
- Machine tool performance characterization and tracking;
- Predictive tolerance analysis and control;
- Process quality control and improvement;
- Robust optimization and other mathematical modeling tools for machining environments;
- Machining process modeling;
- Data standardization and requirement for CNC;
- Use of knowledge and information modeling for SMS (data representation, ontologies, XML, OWL, software application, case studies);
- Concurrent engineering approaches for SMS integration into earlier stages of the product life cycle within an extended enterprise;
- Virtual machining and its integration into the manufacturing enterprise.

There are challenges integrating all these aspects together into a well-structured and functional system. Developing such a system requires coordinated activities across disparate engineering domains. The focus of this conference is to present and exchange research advances and experiences on how to integrate all these SMS technologies. The conference will include both invited papers and papers submitted and reviewed.

Key dates

Abstracts submission: **July 31, 2006**

Abstract acceptance notification: **August 31, 2006**

Full paper submission: **Nov. 30, 2006**

Notification of final paper acceptance: **Jan. 15, 2007**

Camera ready paper due: **Feb. 15, 2007**

Formats for abstract and paper, and submission instructions will be available on the conference web site.

Selected papers will be published in a special issue of the *CIRP Journal of Manufacturing Systems*.

Organizing committee

Alkan Donmez (Co-chair, NIST, USA)

Laurent Deshayes (Co-chair, Univ. of Auvergne, France)

Yusuf Altintas (Univ. of British Columbia, Canada)

Daniel Brissaud (3S, Grenoble, France)

Robert Ivester (NIST, USA)

Tony Schmitz (Univ. of Florida, USA)

Johannes Soons (NIST, USA)

Serge Tichkewitch (3S, Grenoble, France)

Lawrence A. Welsch (NIST, USA)